AUGEAS

January 16, 1995

Mr. Barney Chan
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway
Oakland, California 94502

VIA FACSIMILE TRANSMISSION AND CERTIFIED MAIL

RE: Foothill Square Shopping Center, 10700 MacArthur Blvd., Oakland
ARCO Service Station #276, 10600 MacArthur Boulevard, Oakland

Dear Mr. Chan:

This letter will confirm receipt of your correspondence dated January 5, 1995. As we discussed by telephone, please be advised that we are preparing a work plan to define the lateral extent of ground water contamination resulting from a release from the Young's Cleaners site, as you requested.

Based on the facts presented below, we respectfully request Alameda County Health Care Services (ACHCS) to direct ARCO to define the extent of perchloroethylene (PCE) contamination resulting from former dry cleaners operations at its site as well as the reported release from its former waste oil tank; and to complete the remedial investigation of the petroleum hydrocarbon release from its fuel tanks located at 10600 MacArthur Boulevard.

I. SOURCES OF PCE CONTAMINATION

1. In your letter you state, "The [ARCO] station had previously operated as a dry cleaner prior to ARCO demolishing the buildings in 1968. This fact does not substantially change the responsibility for the remediation of the PCE plume."

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Please clarify this statement. Does the ACHCS intend to direct ARCO to investigate potential solvent contamination resulting from the former dry cleaning operations or from the former waste oil tank?

As we reported in our earlier correspondence, ARCO has stated to the ACHCS that the perchloroethylene (PCE) discovered in wells at or near its site was likely released from the Young's Dry Cleaners located in the Foothill Square Shopping Center, which ARCO asserted was the closest known dry cleaning facility. ARCO's reports led to the ACHCS order to Foothill Square Shopping Center to conduct a subsurface investigation of the Young's Cleaners site.

In all technical reports submitted to the ACHCS that we have received copies of, ARCO failed to report that a dry cleaners operated on the ARCO site in the 1960's and that this operation was the closest potential source of PCE in the affected wells.

ARCO also did not report that the waste oil tank which was removed from the site on September 29, 1988 was also a possible source of PCE and stoddard solvent, another dry cleaning fluid. At the time of the waste oil tank removal, two shallow samples were collected. "One sample, SP-1, was taken from directly beneath the fill pipe and the other, SP-2, from a similar location at the opposite end of the tank." (Tank Removal Report, Pacific Environmental Group, 4/25/89). Both samples contained concentrations of stoddard solvent in excess of 100 parts per million. Overexcavation was performed, and additional samples were collected from 10 feet below SP-1 and SP-2. These samples reportedly did not contain stoddard solvent or PCE; the sidewall samples were not analyzed for PCE. We believe that if PCE had been released from the tank, it is possible that it could have been detected only at greater depths than those sampled, since PCE is a dense, non-aqueous phase liquid with a tendency to migrate downward in soil and groundwater. In addition, the presence of stoddard solvent in the soil at the base of the tank apparently did not lead RESNA to suspect that the former dry cleaner at the site might have generated it.

These facts, which indicate other potential sources of solvent contamination in close proximity to the contaminated wells, lead us to request that ACHCS direct ARCO to assess the extent of solvent contamination resulting from these sources.

II. GROUND WATER FLOW DIRECTION AND PCE CONCENTRATIONS

1. Your letter states: "We cannot concede that the PCE release from this site is not hydraulically linked with that found in monitoring well MW-6 installed by ARCO's consultant. As you are aware, this well has been detecting approximately 2 mg/l PCE for an extended period of time. Consistently lower concentrations of PCE have been detected in wells near the former waste oil tank on the ARCO site. This concentration gradient and the existence of a dry cleaning establishment [Young's] in a potential upgradient location lead our office to request this investigation of Young's Cleaners." (emphasis added)

Is the ACHCS aware of data which supports these statements? We have not been provided data from ARCO which indicates Young's Cleaners is upgradient of the ARCO site. Additionally, PCE levels in MW-4 and RW-1, in the immediate vicinity of the waste oil tank, have stayed at elevated levels or have increased over the last 5 years, according to ARCO reports.

Reported Ground Water Flow Direction

Augeas Corporation has reviewed all documents provided to Mr. Gilcrease by ARCO. In contrast to your statements, several reports of ground water flow direction as determined by ARCO's investigations indicate that Young's Cleaners is downgradient or crossgradient of the ARCO site. There are no reports provided to us by ARCO which indicate ground water flow direction at the site is west/southwest, which would place Young's Cleaners directly upgradient of the ARCO site. Young's Cleaners is approximately 400 feet east of the ARCO site.

Specifically, please reference the following:

a. In the Western Geologic Resources, Inc. (WGR) report dated January 17, 1989, the groundwater flow direction is reportedly to the south, or cross-gradient;

b. "In 1989 and the first quarter of 1990, Applied Geosystems conducted quarterly monitoring of the five onsite ground water monitoring wells on ARCO property. The inferred direction of groundwater flow, disregarding MW-2 which appeared to be in a perched zone, was *toward the north/northwest at a gradient of about 0.003 ft/t.*" This statement is excerpted from Report of Limited Offsite Subsurface Investigation, ARCO Service Station 276, Oakland, California, by Applied Geosystems, January 17, 1991.

(emphasis added). This statement again indicates the Young's Dry Cleaners is cross gradient to ARCO;

c. In the Subsurface Environmental Investigation and Pumping Test, ARCO Station 276, dated January 11, 1993, RESNA reports "The groundwater gradient evaluated for the first-encountered groundwater at this site, based on groundwater elevations obtained from wells RW-1 and MW-1 through MW-5 on November 5, 1991, is approximately 0.002 to 0.003 to the northwest. Groundwater monitoring well MW-2 was not used for gradient interpretations because it is constructed in a shallower, locally perched groundwater zone. Although the groundwater elevation contours appear somewhat skewed by a lower than expected water level in MW-4, this pattern, and *interpreted gradient and flow direction, are consistent with previously reported gradients and flow directions* in the deeper groundwater zone for this site (emphasis added)." This statement also indicates the Young's Dry Cleaners is cross gradient to ARCO;

d. In the Quarterly Groundwater Monitoring and Performance Evaluation, ARCO Station 276, Oakland, California, dated December 30, 1993, RESNA reports "The average *groundwater gradient and flow direction for this quarter was 0.002 ft/ft to the northeast."* (emphasis added). This statement indicates ground water flow direction is from ARCO toward Young's Cleaners; and

e. Plate 3 of the RESNA report Quarterly Groundwater Monitoring and Remediation System Operation, First Quarter 1994, ARCO Station 276, dated June 7, 1994 indicates ground water flow direction directly east. This statement indicates ground water flow direction is from ARCO toward Young's Cleaners.

Ground Water Monitoring Reports for MW-4 and RW-1

ARCO's ground water monitoring reports indicate concentrations of PCE in MW-4, the well located near the former ARCO waste oil tank, have remained fairly constant:

Date	ppb	Date	ppb
7/31/90	1,600	3/10/92	2,300
1/30/91	4,900	2/12/93	1,800
8/6/91	1,700	2/4/94	1,900

PCE concentrations have increased in RW-1 over time, consistent with ground water flow direction to the north.

11/6/91	980
11/24/92	1,500
11/10/93	1,500
2/4/94	2,500

III. GASOLINE CONTAMINATION OF SOILS AND ITS REMEDIATION

1. In your letter you state: "Your consultant [Augeas Corporation] also states that excavation is the most efficient remediation method for the gasoline contamination extending onto the Foothill Square property. Our office does not agree with this approach based on the current data. Shallow gasoline contamination has not been identified in this area as borings B-6 and B-7 detected gasoline at near groundwater depth. Gasoline contamination, however, has been identified in a soil gas survey only."

The last two statements of this paragraph are incorrect. Gasoline contamination of shallow soils, that is, soil above first encountered ground water, has been found southeast of the ARCO station on Foothill Square Shopping Center and this contamination has been confirmed through laboratory analysis, and not *"in a soil gas survey only."*

(a) You have referenced borings B-6 and B-7 in your letter. Applied Geosystems drilled nine borings (B-1 through B-9) on August 3, 4, and 16, 1989 as documented in their report, Report of Limited Offsite Subsurface Investigation, ARCO Service Station 276, Oakland, California, dated January 27, 1991. The report states:

> "Soil samples were collected at 5-foot intervals from the ground surface to a depth of 20 feet, and at 2-1/2 foot intervals from a depth of 20 feet to the total depth of the boring.
>
> Selected soil samples collected form the borings were delivered to one of two State certified laboratories for analysis.
>
> The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015; for total petroleum hydrocarbons

as diesel (TPHd) using EPA method 3550; for BTEX by EPA Methods 5030 and 8020; and for volatile organic compounds (VOCs) by EPA Method 8240.

Two borings, B-5 and B-8, did not contain detectable concentrations of TPHg, but showed some BTEX. This contamination was found at 21 feet and 23 feet below ground surface.

Low levels of TPHg and BTEX were present in two of the nine samples taken from Borings B-1 and B-4. Contamination was present at 29 feet in B-1 and at 26.5 feet in B-4.

Two borings, B-6 and B-7, showed elevated levels of TPHg, TPHd, and BTEX below a depth of 20 feet. Elevated TPHg concentrations were detected in B-6 at depth of 26-1/2 feet (1,400 ppm), and in B-7 at a depth of 21 feet (530 ppm). The sample collected from B-6 at 26-1/2 feet also contained TPHd at 320 ppm.

Borings B-6 and B-7 are located, respectively, about 50 feet and 65 feet south/southeast of the ARCO Station building at the MacArthur Boulevard driveway entrance to the Foothill Square Shopping Center."

Additionally, the report indicates very high levels of "unidentified" volatile organic compounds in Boring B-6.

(b) Several reports in the file, in addition to the one referenced above, confirm gasoline contamination of soil in the immediate vicinity of the ARCO station.

(c) Reports also indicate floating free product was found in wells constructed near ARCO in the shallow water bearing zone on Foothill Square property several years ago.

Our recommendation that ARCO excavate gasoline contaminated soils is also based on the need to expedite remediation of the Foothill Square site. An unreasonable length of time has elapsed since 1988 when ARCO first had knowledge that a release from its tanks had impacted the Foothill Square property. This impact has prevented the beneficial use of the

Foothill Square property over the last seven years and diminished the property value. At this point, it seems unreasonable to us to allow implementation of a remediation program such as soil vapor recovery, which in all likelihood would require years to complete and would continue to prevent the use of the property.

Gasoline Contamination at Foothill Square as a Result of Release from ARCO Tanks, 1988

Contamination of the Foothill Square Shopping Center soils in close proximity to the ARCO service station was reported to the ACHCS approximately 7 years ago. Soil samples have been collected from borings on Foothill Square by several different consultants since that time further defining the extent of soil contamination at depths ranging from 14 feet to 51 feet below grade.

The following excerpt is from the Kaldveer Associates report entitled, Preliminary Environmental Assessment, Proposed Foothill Square [Redevelopment], Oakland, California, dated October 3, 1988.

> "The analytical results indicate contaminated soil and groundwater is present in the northwest corner of this site [near the ARCO property]. The analytical results reported for EB-1 are in excess of various cleanup levels set by Federal and State agencies. Field observations detected the presence of gasoline in the subsurface soils and groundwater. Values reported by the laboratory confirm the presence of gasoline.
>
> After review of the analytical results, several contacts to agency representatives were made to assess the potential source of the contamination in the northwest area of the site. To our knowledge, no fuel leaks have been reported by the adjacent ARCO service station to date.
>
> We contacted Mr. Lowell Miller of the Alameda County Department of Health Services regarding the ARCO service station and the Seven-Eleven store. He was familiar with activities at the Seven-Eleven store, but does not know the extent of the subsurface contamination and has received no fuel leak reports from the ARCO service station."

The Kaldveer investigation included the drilling of 15 soil borings throughout the entire site with depths drilled ranging from 11.5 feet to 36.5 feet. Soil samples were collected from each boring and composited for chemical analysis. Grab water samples were collected for chemical analysis from two of the borings in which groundwater was encountered. The water samples contained an organic phase ranging from 10% to 60% of the sample volume. The grab water sample collected from boring EB-1 contained Total Petroleum Hydrocarbons (TPH) as gasoline at [concentrations of] 8360 ppm. In addition, varying concentrations of pesticides and PCB's were detected, however, the laboratory could not provide second-column confirmation, suggesting that the data might not be valid. (Source - WGR, Inc. report dated January 17, 1989.)

WGR installed five soil borings B-1 through B-5 on the Foothill Square site in December 1988. Total depth of borings ranged from 29 feet for B-5 to 50.5 feet for B-4. Hydrocarbon odors were noted in cuttings from 14 feet to 21 feet below grade from the unsaturated zone in boring B-3. All five borings were converted to monitoring wells. These activities are detailed in the WGR report, Soil Sampling and Monitoring Well Installation, Foothill Square Shopping Center, Oakland, California, dated January 17, 1989. According to this report,

> "The presence of hydrocarbons in soil from boring B-3 and in water collected from monitoring well MW-3 is consistent with the analytic results for soil and water collected during the Kaldveer investigation from boring EB-1, located near well MW-3, although the concentrations of benzene, total xylenes and TPH detected in soil and water during this investigation were much lower and other aromatic hydrocarbons were not detected. *The ARCO service station to the west of the site is upgradient of this well.* Although WGR has no information, it was observed during our investigation that a tank was being investigated at the ARCO station (emphasis added)."

In the Letter Report Quarterly Groundwater Monitoring and Remediation Performance Evaluation, Third Quarter 1993 at ARCO Station 276, dated December 30, 1993, RESNA reports "Floating gasoline product 0.01 foot thick was detected in offsite well MW-7 on August 18, 1993." Reports on free product pumped from MW-7, immediately west of

MW-3, located on Foothill Square shopping center property downgradient of the ARCO tanks, date back to 1991. Free product removal has also taken place at MW-2, which is adjacent to the former tanks on the ARCO property. Wells MW-2 and MW-7 were constructed in the shallow water bearing zone.

The above-referenced data from 1989 was used by ARCO as a basis for the development of a proposed soil vapor remediation system for the Foothill Square Shopping Center site prepared by Pacific Environmental Group (PEG) on behalf of ARCO as documented in PEG correspondence dated January 3, 1990. Unfortunately, a soil vapor recovery system was never implemented by ARCO at that early date for their remediation of gasoline contaminated soil on the Foothill Square Shopping Center site. If that remediation had been commenced in 1989 or 1990, it would likely have been completed by now. ARCO's failure to perform such remediation in a timely manner now prevents the current sale of the immediately adjacent portion of Foothill Square to McDonald's Corporation for use as a restaurant.

Again, we respectfully request ACHCS to direct ARCO to define the extent of PCE contamination resulting from former operations at its site; and to complete the remedial investigation of the petroleum hydrocarbon release from its fuel tanks located at 10600 MacArthur Boulevard.

Please call us at (415) 726-7700 if you have any questions. Thank you for your time and consideration.

Sincerely,

Charles D. Conway

Charles D. Conway, R.G.